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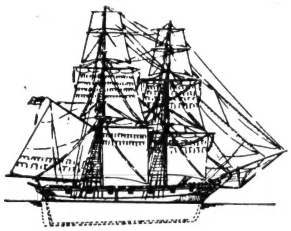

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Model Ships and Power Boats

INCORPORATING *Ships and Ship Models*

EDITED BY EDWARD BOWNESS

VOL III NO 29 MAY 1950

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The Ship's Log

THE ASSOCIATION OF SHIP MODEL SOCIETIES

As the result of a spontaneous demand for closer contact between the Ship Model Societies, the above association was, after much preliminary deliberation, launched early this year, under the chairmanship of Mr. W. Honey, chairman of the South London Ship Model Society.

The prime object of the association will be to serve as a co-ordinating body and to assist societies in any way which may be found possible. It will arrange inter-society exhibitions, competitions, visits to places of interest, etc., and will perform such other functions as may be required by the member societies. The association will at no time have any jurisdiction over the internal affairs of the individual member societies.

The work of the association is carried out by a council of seven, who are elected annually by the committee of the association at its annual general meeting. The committee is composed of representatives of the member societies, who may appoint not more than three of their members to serve thereon.

Up to the present the activities include:—

(i) The preparation of a bureau of available information, great strides having already been made.

(ii) Preparation of a panel of lecturers and arrangements for them to visit societies or groups of societies.

(iii) Organisation of the "S.M.S." stand at *The Model Engineer* exhibitions.

(iv) Assistance to the London County Council in the preparation of a collection of models to be exhibited during the Festival of Britain in 1951.

Further information may be obtained from the General Secretary, Mr. K. G. Hughes, of 180, Valley Road, Streatham, S.W.16.

"The Model Engineer" Exhibition. Will those willing to undertake full-time or part-time stewarding kindly send dates and times to the Organising Secretary, Mr. S. A. Elmes, of 81, Woodhurst Avenue, Petts Wood, Kent. The Organising Secretary will also be pleased to hear from societies in the provinces who would be willing to loan models for display on the societies' stand.

The Exhibition this year is laying greater stress on modelmakers in action. With this in view the organising secretary would be glad to hear from any ship model society members who would be willing to demonstrate various aspects of ship modelling; a method of making gratings, a jig for drilling deadeyes, or any such gadget which improves the model or simplifies its construction. Offers of help, if only for an hour at a time, would be very welcome.

MAKING MODEL PROPELLERS

The response to the letter in our March issue requesting information on the making of model ships' propellers has been very gratifying, one might almost say embarrassing. In this issue we publish one of the articles received, which is from Mr. A. D. Trollope, whose work on power boats is well known to our readers. Other articles received include those from Mr. R. R. Eltridge, of Tottenham, N.17, Mr. P. W. Thomas, of Dunstable, and Mr. S. V. Woodford, of Lymington, Hants. Mr. G. Blazdell, of Norton, Glos., reminds us of a very excellent article published in *The Model Engineer* for March 19th and April 2nd, of 1903. To all who have written us we send grateful thanks. We hope to publish some of the information and also, if possible, to illustrate, in future issues, some of the jigs described.

*MODEL MARINE POWER PLANTS

by *Edgar T. Westbury*

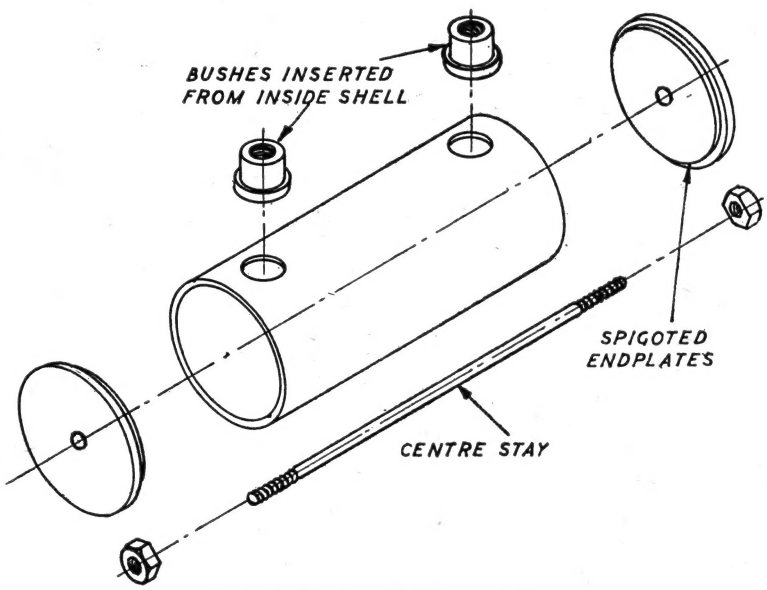
THE serious model power boat enthusiast demands something more of a power plant than the mere ability to propel a boat; it must be an object of mechanical interest in itself, in which construction, running and maintenance all contribute in providing scope for the particular talents of the model engineer. It is for this reason that the steam engine has always been the prime favourite among those " that go down to the pond with boats," and will long continue to be so, despite the rival claims of more modern, and in many cases, more efficient, forms of motive power.

Steam engines may be built in innumerable forms, from the simple to the complex, but in all cases both their principles and constructional processes are reasonably straightforward and easy to understand. Few types of engines are more interesting to construct, or offer a more definite prospect of being successful when completed. In nearly all cases, a moderate efficiency, which is adequate for propelling prototype model boats, can be assured without difficulty; and if it becomes necessary to produce the utmost performance in a plant of small bulk and weight, it is possible to develop a form of steam engine which will hold its own against any type of mechanical power unit so far known.

Even if the user does not construct his own engine, there is a good deal of interest to be derived from the work of installing it in the hull, and in its subsequent running, besides the incidental work of maintaining it in working order and attending to its various needs. There are few people so devoid of mechanical interest that they have never experienced the primitive ambition to become an engine driver; and even the simplest form of steam engine will satisfy that urge as nothing else can.

The disadvantages of steam engines, in connection with certain types of prototype model boats, have already been referred to; but subject to these reservations, it may be said that the great majority of boats lend themselves readily to steam engine propulsion, and some types definitely demand it. A model of a tramp steamer, a tug, or a naval pinnace, will attain its ultimate degree of realism when powered with the appropriate form of engine, which except in specialised cases, is always a steam engine.

It is possible to model the marine steam engine practically to exact scale without introducing any very great difficulty in getting it to work efficiently, but the complexity of the larger sizes of engines is rather unsuitable for reduction in scale proportion in a model intended for real work, besides being unnecessary for utility and efficiency. Most steam-driven boats have considerably simplified forms of engines, but even so, it is possible, by paying due attention to detail, to preserve a definitely authentic flavour of realism in the engine room of even the smallest boat. This is a feature which has not, however, received the consideration which it deserves at the hands of constructors, who have in some cases been satisfied with the crudest form of "utility" installation which would produce the desired results. It is, however, little more difficult to produce an engine which has the character, if not the minute detail, of a marine engine, or a boiler which really looks like the real thing, without sacrificing its working efficiency in any way. This has been very effectively done in some of the best examples of prototype models which are to be seen regularly at such places as Victoria Park and the Round Pond; the engine room of such a well-appointed boat,



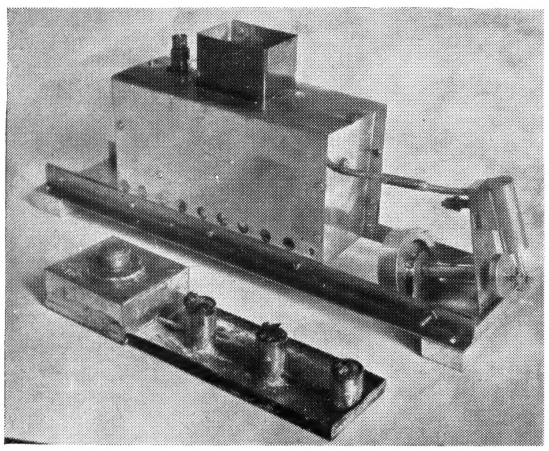
A simple " indestructible " pot boiler

*Continued from April issue, page 24.

complete with the hiss of steam, the throb of machinery, and the smell of hot oil, is convincing even to those with long experience of the real thing. At the other extreme, however, there are boats which are beautifully fitted and finished on the outside, and yet they are but as " whited sepulchres," because all illusion vanishes as soon as one takes a single glance down the engine-room hatch.

One must, however, accept the fact that many of the users of steam engines in boats do not worry about realism so long as the engine will carry out its allotted task; and to insist that a steam engine must be realistic to have any reason for existence would merely frighten them away from this form of power plant altogether. The simplest and most primitive forms of steam plant are justified in such cases, at least equally as much as any other simple means of propulsion, and they may in many cases form an introduction to the use of steam engines, which may lead to a healthy enthusiasm for the engine as an object of interest in itself, and not merely a means to an end.

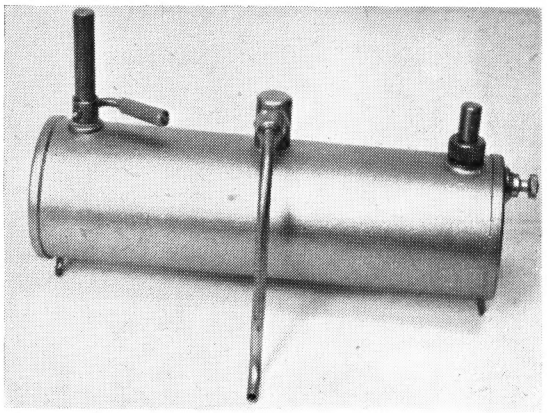
The simplest form of miniature steam engine consists of a single-cylinder oscillating engine, with a " pot " boiler fired by a methylated spirit wick lamp. While this is very inefficient in the exact sense of the term, it is capable of providing ample power for propelling the smaller sizes of prototype boats. It is easily installed, and gives very little trouble in running. Plants of this type are produced by several model manufacturing firms, either in the form of separate components, or as complete installations,



A simple marine steam plant, with oscillating engine, pot boiler and three-wick spirit lamp

and it is also possible to purchase steam-driven boats in which the plants are installed. The latter are, however, mostly of somewhat crude exterior design, rarely aspiring to a higher status than that of toys, and hardly satisfying to the marine model enthusiast. Some examples of commercially-produced simple steam plants are illustrated, and will no doubt be of interest to readers who wish to equip hulls with steam power, with the minimum trouble and expense.

The oscillating type of engine is, obviously, capable of being built in various sizes, and in either simple or complex form; all these possibilities have been fully exploited in the past both by amateur constructors and manufacturers. It is, however, in the small and simple types that it serves the most useful purpose; if made either large or elaborate, its disadvantages become more conspicuous than its modest virtues. A great deal of the ingenuity which has been expended on devising dubious " improvements " to the oscillating engine might wth greater advantage have been applied to the more orthodox and efficient slide-valve engine, which, despite its greater number of working parts, is often found a more straightforward proposition for the amateur



The S.E.L. marine boiler unit

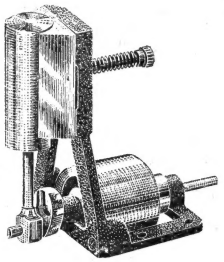
constructor. Commercial production is a totally different proposition, and the use of appropriate tools and processes enables the simple form of steam plant as described above to be produced more cheaply than any other form of complete power installation of comparable performance. In some cases, the oscillating engine has been fitted with casings to improve its appearance and make it look like a " real " engine; and there have also been variations on the theme of design, employing oscillating slide valves and similar devices.

The purchaser of a ready-made oscillating engine or complete steam plant will be well-advised to look first for accuracy of the working parts, and adequate bearing surfaces. It is in the latter respect that many such engines are sadly deficient, the " bearings " being merely holes in their frame plates, with quite inadequate area either to give reasonable wearing life or even to retain an oil film for more than a few seconds. Details such as this can often be improved upon after the engine has been bought, but the question is whether it is really worth while. The fit of the piston in the cylinder, and the flat surfaces of the cylinder and port block, are also highly important from the aspect of efficiency, but most of the reputable manufacturers go to some pains to ensure accuracy in these respects, realising their direct and immediate effects on the working success of the engine.

SIMPLE BOILERS

The " pot " boiler of the simple steam plant is

usually a plain cylindrical vessel, closed by flanged discs at the ends, all joints being either sweated or (in the better makes) brazed. This form of construction usually gives quite adequate strength for working at the relatively low steam pressures encountered, and it is very rare that any accidents through the breakdown of boilers is reported, but it would perhaps be too optimistic to deny the possibility that they could occur. The overheating of a small boiler through being allowed to boil dry, may cause weakening or complete failure of a sweated joint, and such eventualities should be carefully guarded against, by ensuring that the boiler is filled to the proper level when starting a run, and is not run longer than the prescribed safe period. In many cases the capacity of the spirit lamp container is limited so that the fuel is expended before the water gets too low, and this is a very sound safety measure—providing one does not forget to refill the boiler when the lamp is replenished.



The S.E.L. oscillating marine engine manufactured by Signalling Equipment Ltd., Potters Bar, Middlesex

The efficiency of the " pot " boiler, in respect of its evaporation capacity for a given consumption of fuel, is low, but it can only be improved by considerable complication of design, and to provide an elaborate boiler for a very simple type of engine would be hardly logical. It is, however, practicable to improve the structural design of the boiler, in cases where it is home-constructed, and a form of simple boiler which has a wide margin of mechanical strength, and is practically indestructible under the hardest conditions of usage, is illustrated herewith. The thickness of the cylindrical shell and other components has been exaggerated; it is not necessary to use heavier material than usual, except in the case of the endplates, which must be thick enough to maintain rigidity against the pull of the central stay bolt. It will be seen that the bushes, and all other boiler fittings which may be used, are inserted from the inside of the shell, and have a rim which prevents them from being forced out by steam pressure; they should fit closely in the holes in the shell, so that the minimum amount of solder is required to fill up gaps. After the fittings are assembled and the endplates sweated in, the staybolt is moderately tightened, and the nuts sweated over. This boiler can be run dry without risk of bursting, and in practice it is found that with the amount of heat obtainable from a spirit lamp, it does not even become leaky.

It is advisable with any type of boiler to collect the steam at a high as point as possible to avoid the risk of water being carried over with the steam; in the older boilers, the fitting of a " tower " or dome was common practice, but this is often precluded by the lack of head room. The steam pipe may with advantage be taken through the furnace, in the form of a single loop or coil, which acts as a superheater or steam dryer and promotes engine efficiency.

A safety valve is a necessary fitting even on the simplest types of boilers, and in such cases it is usually combined with the filler cap. These fittings can be obtained ready made, and are fairly reliable, but care should be taken to see that the spring of the valve is supple, not clogged with dirt or scale, and is not screwed down any tighter than is really necessary to hold sufficient pressure to work the engine.

Boilers are often installed with only a very sketchy type of casing, or none at all, but it is well worth while to provide a complete enclosure, and the internal lagging of the casing with asbestos millboard will ensure the maximum heat conservation. An adequate space must, however, be left around the boiler shell for the flow of the hot gases, and good ventilation allowed, including apertures both for the entry of air below the lamp flame and also its escape at the funnel or uptake. In the case of plants which are enclosed in the hull of a fully decked boat, it is necessary to ensure that air has free entry to the boiler casing apertures, by providing gratings or open skylights at appropriate places in the deck. This is a very obvious necessity, but one which is only too often forgotten or neglected. One cannot have too good ventilation in this respect, but draughts must be avoided, and in an open boat, it is often found desirable to shield the air apertures from the direct effect of rough weather.

BOILER FIRING

In the case of simple steam plants with pot boilers, the fuel almost exclusively employed is alcohol, in the form known in this country as " methylated spirit." Although this is a comparatively expensive fuel, and by no means efficient in respect of calorific value, it is the most convenient of liquid fuels to use, and produces sufficient heat for its purpose, when burnt in the simplest form of lamp. An alternative, still more expensive in respect of heat value, but even simpler to use, is solid Meta fuel (metaldehyde) which does not require a lamp or other appliance, as it can be burnt on any flat metal surface; but this fuel is only suitable for the very smallest plants and for short runs. Contrary to popular opinion, it is no easier to obtain complete combustion with these fuels than any others, but they have the advantage that however inefficiently they are burnt, they do not produce smoke or soot—though they can, and often do, burn incompletely and generate acrid fumes.

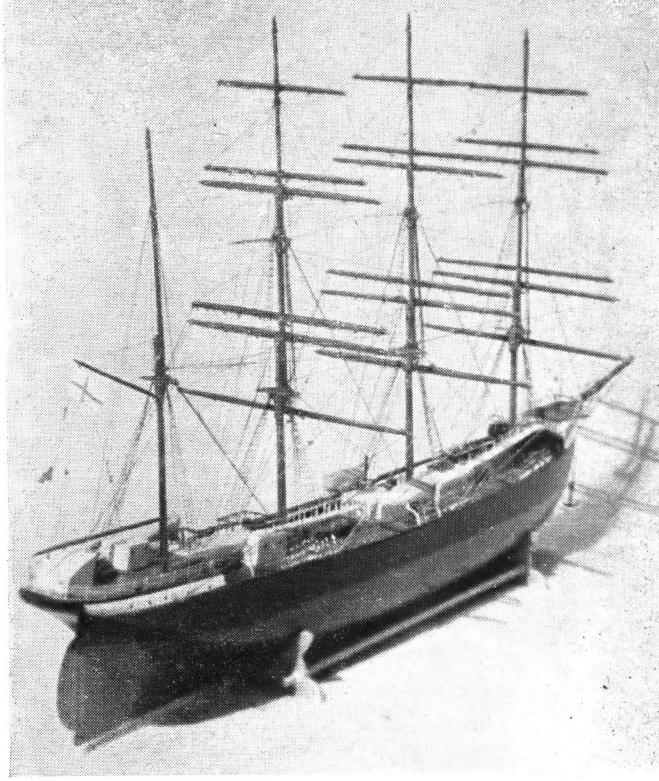
The more efficient liquid fuels, such as paraffin or petrol, call for much more elaborate forms of lamps to ensure smokeless combustion, and solid fuel, such as coal, is still more difficult to use, under the conditions which apply generally in model marine power installations.

(To be continued)

OUR READERS' MODELS No. 3

A Model of the Archibald Russell

by E. J. de Flines



WHEN we lived in Padang (Sumatra) before the war, I discovered one day, between the many books in my father's library, some of the books of Alan Villiers and Basil Lubbock. I was enthusiastic about the photographs of the beautiful sailing ships, of which I had no previous knowledge.

In 1935 I happened to see in San Diego (U.S.A.) the old *Star of India*, a 3-mast barque, the former full-rigged ship *Euterpe*, which was laid up as a floating maritime museum, and is, I believe, still lying there.

After our arrival in Holland, in 1937, I saw more books and magazines about, and photographs of the beautiful last survivors in sail and I fell the more in love with "my" sailing ships, though I had only seen one in reality.

So I decided to build a model of one of the last sailing ships still afloat. It had to be Gustaf Erikson's *Archibald Russell*.

Just before war broke out in 1939, we received some blueprints, by Mr. Harold Underhill, from England. I was 15 years of age then.

Soon I started building the model. The hull was built up from wooden board and later hollowed out. The deck was made in one piece and, after having been given the correct sheer, was laid in. After obtaining a smooth surface of the hull by sandpapering it very carefully, it was painted black, and red under the waterline. The bowsprit was fixed and deck-fittings were made. Houses, hatches and lifeboats of wood, capstans, bollards, ventilators, etc., of copper rods and iron nails. Railings were soldered, of wire and pins.

I will not bother you by giving all details. But I remember, I had great fun in making the pumps. On being completed after a whole afternoon experimenting, you could turn the wheels around, and see the piston-rods going up and down, so that in my imagination I suddenly saw water flooding the deck of the little ship!

The masts and yards were made of wood, scraping them down to the correct shape with pieces of broken glass or razor blades and sandpapering them afterwards. I painted them brown. (I still do not know if it is the correct colour.) The model was finished with the exception of the rigging. It was about 1942 or '43 then, and as rigging material was not available the model *Archibald Russell* was "laid up."

After liberation my friend Rob van Dijk, who really knows all about sailing-ships' riggings, helped me to finish the model. The last fittings, anchors, flying-bridge, etc., were fixed, and about 1946 my *Archibald Russell* was finished.

I hope the photograph can give you an impression of what she looks like. Probably the lines of stern and bow are not exactly correct, but that is my fault. The drawings were to scale! It is my first and, perhaps [?] last sailing ship model, and I started it when I was quite young. The lifeboats' davits are still missing. The model is 27 in. long over all (bowsprit included).

Can any reader send me a photograph of the *Archibald Russell*, recently taken, in exchange for a photograph of the *Danmark*, for instance?

[If any of our readers wish to write to M. de Flines and will address him c/o this office, we will gladly forward their letters.—ED.]

*A Model Flemish Carrack

The late C. M. MILLWARD'S *series concluded by the Editor*

THERE are still a number of small details to be added before the model is complete. Most noticeable of these is the ship's boat. This is of the size and shape shown in Fig. 20. It should be carved out from a suitable piece of close grained wood. As will be seen from the drawing it has short decks at the bow and stern, a wide thwart with a hole in it for the mast located just forward of amidships, and five thwarts of normal width for the rowers. Neither oars nor rudder are shown in the museum model and in the absence of reliable information as to their form they may be omitted. Eyebolts are fitted at the bow and stern for lifting. The lifting tackle consists of a pendant fixed under the main-stay and over the other pendants at the main mast head, having at its lower end, which is about half way down the mast, a single block *A*, Fig. 21. Through this block is rove a rope, one end of which is fastened to the eyebolt in the stern of the boat, the other end having a block *B* seized into it with an eye for a third rope worked into the strop. The third rope is led from this block down to a block *C* which is hooked into the eyebolt in the bow of the boat, up to block *B* and down to be belayed on a pin on the port side of the break of the poop.

The grapnel should now be made. This has a shank 5 ft. or 6 ft. long, having a ring at one end and a series of six points or flukes about 3 ft. 6 in. across at the other. Below the points a small ring is provided to take the rope which supports it from the end of the bowsprit. The shank may be made from a piece of stout wire, one end being drilled and tapped for a small eyebolt and the other squared and drilled to receive the ring. The points should be made from a circular disc of sheet brass cut to the shape shown, the points then being bent up in the form of a shallow cup. This should be secured to the bottom of the shank by means of the small eyebolt after which a good fillet of solder should be run in between the shank and the upper side of the disc which forms the points. The grapnel is secured to the ship by means of a stout rope which is fixed near the base of the bowsprit. Mr. Morton Nance has used a chain in his model but it is doubtful if chains were used for this purpose at that period, and the engraving on which the model is based seems to show a rope. A lighter rope from the eyebolt in the base of the grapnel is taken through a block at the end of the bowsprit and led along the bowsprit to be belayed at a pin near its base, as will be seen in the cover picture of the January issue.

The size and shape of the anchors may be taken from the same photograph, one being fitted on either bow. The anchor cable is led from the usual ring in the end of the shank to the hawse hole, the other end being lashed to a ring in the bulwark just aft

*Continued from April issue, page 33.

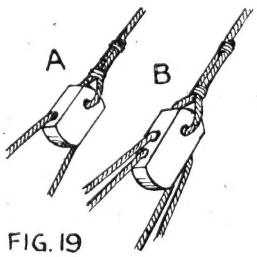


FIG. 19

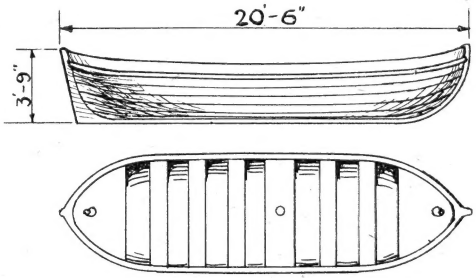


FIG. 20

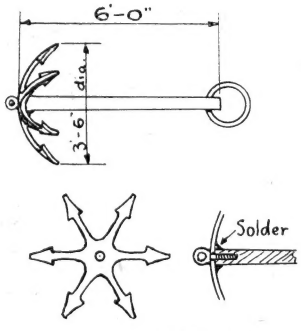
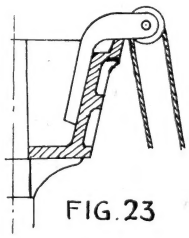


FIG. 22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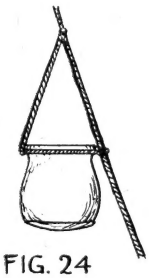


FIG. 24

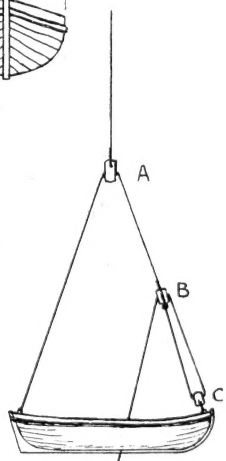


FIG. 21

of the forecastle. The anchors should be made of brass and should have wooden stocks. The rudder lines should now be fitted. There is one on each side of the ship, their outer ends being spliced into the eye already provided on the rudder, and their inner ends passed through one of the ports on the side of the poop, sufficient slack being allowed to permit of free movement of the rudder.

The tubs on either quarter were probably used for storing fresh meat or fish. It is interesting to speculate as to whether the harness casks of the latter day sailing ships were not a survival of this practice. Their scale size in the Science Museum model is 7 ft. deep by 3 ft. 6 in. dia. They can be turned from wood and should be bound top and bottom by a strip of paper or metal—or the ridge could be left on when turning. They are secured in position by a cord under the upper hoop, the ends of which are secured to small eyes in the bulwarks, just aft of the aftermost main deadeyes. Note the position of this deadeye in Fig. 13 (March issue) as compared with the photograph on the cover of the January issue.

Two small cranes (see Fig. 23) are fitted in both main and fore tops, one on the port and one on the starboard side. These may be made of wood or even of plastic material and should carry a sheave at their outer ends, which are forked to receive them. An endless rope is rove through the cranes on the port side, that from the main top being secured to the rail on the forecastle head, and that from the fore top leading down the forward side of the mast. Two buckets are fixed to each of these ropes, as shown in Fig. 24, in such a position that one is on deck while the other is at the top. These may have been used for hoisting stones or other missiles to the men in the top, or possibly on occasion for sending up provisions in cases where the men had to stay aloft for long periods.

The mizzen top is furnished with a cannon, the carriage of which is extended backward to facilitate its adjustment radially. The carriage is pivoted on the head of the mast. The length of the cannon is a little more than half the diameter of the top and its shape generally and that of its carriage may be seen in the cover photograph of the January issue. Mr. Morton Nance made his flag or pennant of metal and this enables a realistic setting to be given to it. It has a sleeve at its hoist which fits tightly on the flagpole. A number of spears or darts are placed in the fore and main tops and the fore top has a netting spread over it from the flagpole—probably being lower than the enemy's main top it was more vulnerable and the netting gave some sort of protection against bulky missiles.

The stand and case may be left to the discretion of the builder. We strongly recommend that the model should be enclosed in a case as otherwise it is impossible to protect it from dust, and dust will, in time, ruin any ship model.

Errata.—In last month's instalment, for "martuet" in the last three paragraphs, read "martnet," and in the 26th line from the end, for "bowlines" read "martnets."

The Cover Picture

DEAR SIR:

With reference to your letter concerning the model Thames barge constructed by me and entered in the "Schoolboys Own" exhibition, I have the pleasure in giving hereunder some details of construction.

In April, 1949, I drew out plans of the s.b. *Kathleen*, from dimensions given in Mr. Edgar March's book *Spritsail Barges of the Thames and Medway*.

I used a $\frac{3}{8}$ in. to 1 foot scale, and *Kathleen* being an 82-ft. barge, this worked out to about 30 in. long, 8-in. beam, and 3-in deep amidships.

The keel, stem and stern posts were cut out in one piece, the floor timbers, frames, and deck beams were then glued and fitted in position. The keelson was then screwed to the keel thus sandwiching the frames.

Along the top of the frames a wale was fitted to hold them in position whilst planking.

Taking advantage of the flat bottom this was fitted in one piece, of full width, $\frac{1}{8}$ in. thick.

The planks at bows and stern were softened in boiling water, sprung to shape and fixed when dry.

Now the hold linings, ceilings and bitt heads were fitted and the after cabin furnished to detail.

The deck was fitted in one piece and cut out in way of hatch openings and cabin, then coamings, cabin sides with removable top, bulwarks, quarter boards, main horse, rudder, fo'c'sle scuttle and leeboards were fitted, which finished most of the woodwork.

Metal fittings were made mostly of brass or copper and winch gears from clock wheels.

Spars were made of $\frac{1}{2}$-in. dowels shaped up with a spokeshave and deadeyes, blocks, setting booms, sweeps, etc., of scrap mahogany.

Sails were made of very fine model yacht racing canvas dyed to colour and the small boat planked up with thin cardboard.

Skipper and mate were carved from balsa wood.

The barge was tried out in Hoo Creek and proved herself to be an extremely good sailer; her best performance being when she is about half loaded, with 5 to 6 lb. in her hold.

Yours faithfully,
M. COLLINS.

Some Notes on Trafalgar Signals

by ALEC PURVES

THE question and answer on page 18 of the March, 1950, number, regarding signal flags at Trafalgar, prompt me to submit the following notes which may be useful to modellers, particularly since this matter not only crops up at frequent intervals, but is the subject of many mistakes on exhibition models.

Two signal books were in use at Trafalgar—*The Signal Book of the Ships of War*, 1799, and Sir Home Popham's *Telegraphic Signals or Marine Vocabulary*. The former included all the set signals connected with sailing, fighting, routine work, and similar matters, while the latter formed a supplement of useful single words and phrases also a spelling table for words not included in the vocabulary.

The general signals were made by numeral flags 1 to 0, with a repeater or " Substitute " flag to repeat the next flag above, as shown in the March number, while the top flag of a 3-flag hoist was repeated at the bottom (if necessary) by a pendant half white, half red. Thus 220 would be hoisted " 2, Substitute flag, 0," while 202 would be " 2, 0, Substitute pendant." These signals were hoisted where best seen by the ship or ships to which they were addressed, usually at the mizzen truck or possibly at the main; the mizzen would be the more convenient as the signal lockers were aft on the poop deck. The flags were probably about 11 ft. × 9 ft., although a pencil note in an old signal book mentions flags 12 ft. square.

Popham's code used the same signal flags, therefore some indication was needed to show that a signal was taken from this code, and this consisted of a flag divided diagonally right to left, with *red* above and white below (although white is shown uppermost in the copy of " Popham's Signals," in the R.U.S.I. Library, but this has been incorrectly coloured). Two methods are suggested by Popham, one being to hoist this " Telegraph " flag at another masthead or yardarm and keep it flying while signals from his code were being made, the other being to hoist the " Telegraph " flag first, followed by the signal hoists and, finally, the special " Finishing " flag (blue over yellow, diagonally). There is no indication that this latter method was ever used, and it is likely that the " Telegraph " was left flying at the main masthead during the signal; signal logs of various ships present at Trafalgar record " Telegraph " at the beginning of several signals, but no " Finishing " flag is logged.

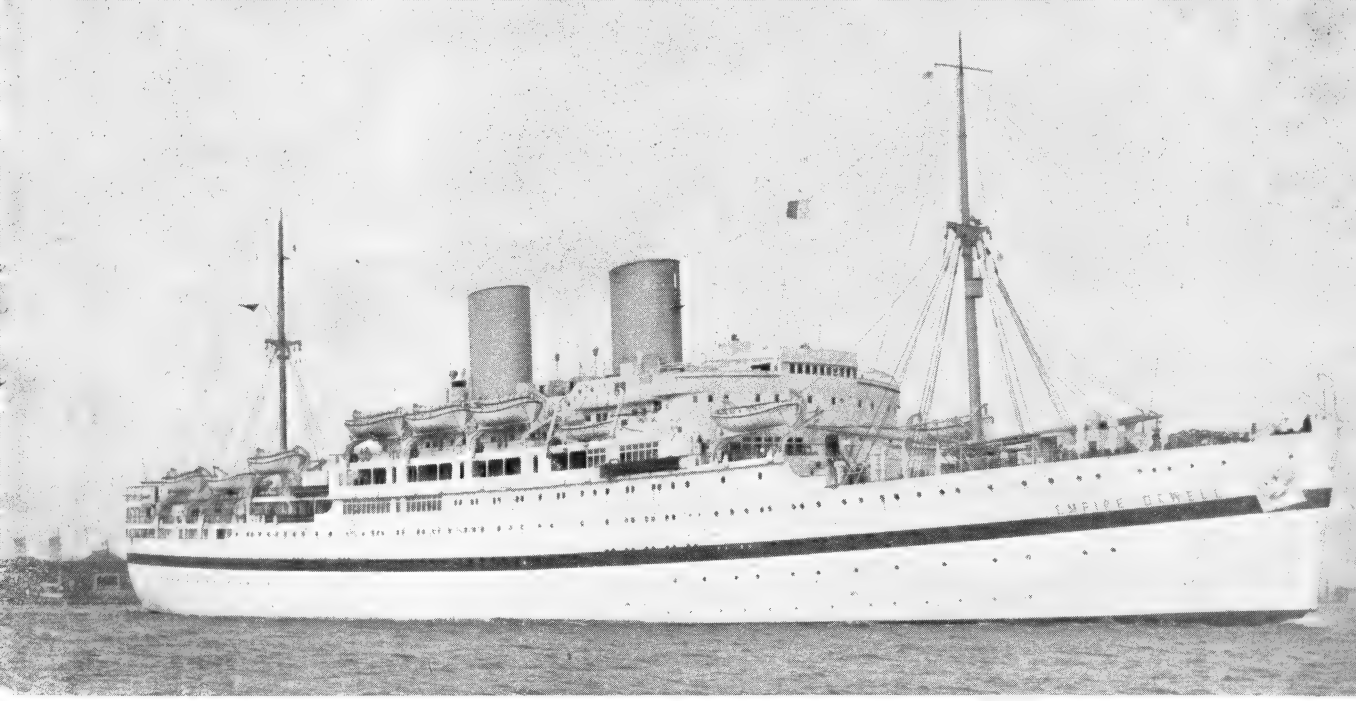
There has been considerable controversy regarding the colouring of No. 4 Flag, and this is presumably why it was left blank in the diagram in the March number. The colours were red and white, quarterly, but while some signal books show red in the first (top left) quarter, others show white. These books were all hand-coloured and small differences like this are not to be wondered at, but unfortunately no actual specimens of the flags are known. Commander H. P. Mead, R.N., in his little book, *Trafalgar Signals*, published in 1936, gave support to the " white first " school, but in the light of subsequent investigations, I believe he has now reversed or modified his opinion.

If a model of the *Victory* is to be shown with one of the hoists of " England expects . . ." no other flags should be hoisted (except the " Telegraph " flag at the main). From the various ships' logs details of times of hoisting signals and other incidents in the battle can be ascertained, although considerable variation occurs and an average must be taken. It appears that the famous signal was made at approximately 11.50 a.m. on October 21st, 1805 (recorded times vary from 11.25 to 12.10); the log of the *Euryalus* tells us that the enemy opened fire on the *Royal Sovereign* at 12.15, and at 12.16 the English Admirals hoisted their respective flags, and the fleet " the British Ensign, White." Thus it will be seen that until entering action, colours were not worn.

After the immortal signal, but before colours were hoisted, Nelson made two more signals; the first, " Prepare to anchor after the close of day," was made with the Preparative Flag (blue and white horizontal stripes), 63, and 8; this was followed by No. 16, with the *Africa's* pendants (a half-red, half-white one over a yellow one), telling her to engage the enemy more closely, as she had got out of position. At approximately noon, or soon after, No. 269 with *Victory's* pendants (yellow over red) was addressed to the *Temeraire*, telling her to take station astern of the flagship. At 12.15 p.m. with the opening of the action, came No. 16 again, this time addressed to the fleet in general. Nelson's last signal was probably made about 12.30 p.m. (he was wounded at 1.15, and died just after 4 p.m) and was addressed to the *Africa*—No. 307 with *Africa's* pendants, telling her to make all sail possible with safety to the masts.

One point in the published answer needs, perhaps, a slight amendment. I do not think the Union Jack would have been flown from the bowsprit staff, as this would almost certainly have been unshipped while at sea. In the days of the spritsail topmast, the jack was worn at sea, but with the introduction of fore-and-aft headsails, the jackstaff was found to be inconvenient when the sails were set, and thus arose the practice of wearing the jack only when in port. Nelson's orders of October 10th, 1805, however, instructed captains that " when in the presence of the Enemy, all the Ships under my

(*Continued on page* 51)



THE TROOPSHIP *EMPIRE ORWELL* AND HER ONE-TIME SISTERSHIP "*LE JEUNE*"

by Laurence Dunn

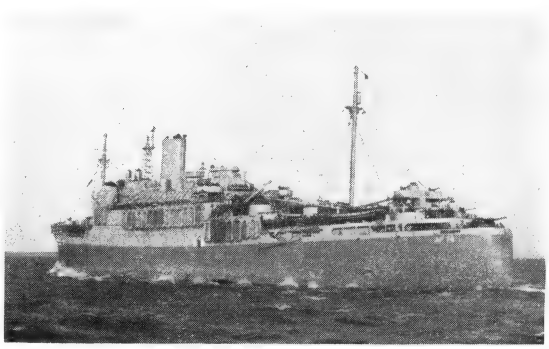
IN January, the 18,036-ton troopship *Empire Orwell*, sailed from Southampton on her maiden voyage under this, her third name. For the past two years she has been in the hands of John I. Thornycroft & Co. Ltd., undergoing an exceptionally thorough refit, which is reported to have cost £2,000,000. Now she looks more handsome than ever in her trooping colours. Hull and superstructure are white, while funnels and masts are a yellowish buff. The band round the hull is of royal blue, and the boot topping is brick red. The yellow of the name and port of registry completes the colour scheme.

From the modeller's point of view, she is a most interesting subject, especially when her original appearance is compared with her present day one. What is even more striking is how unlike each other a pair of sisterships can be made to look, once they have passed into different hands.

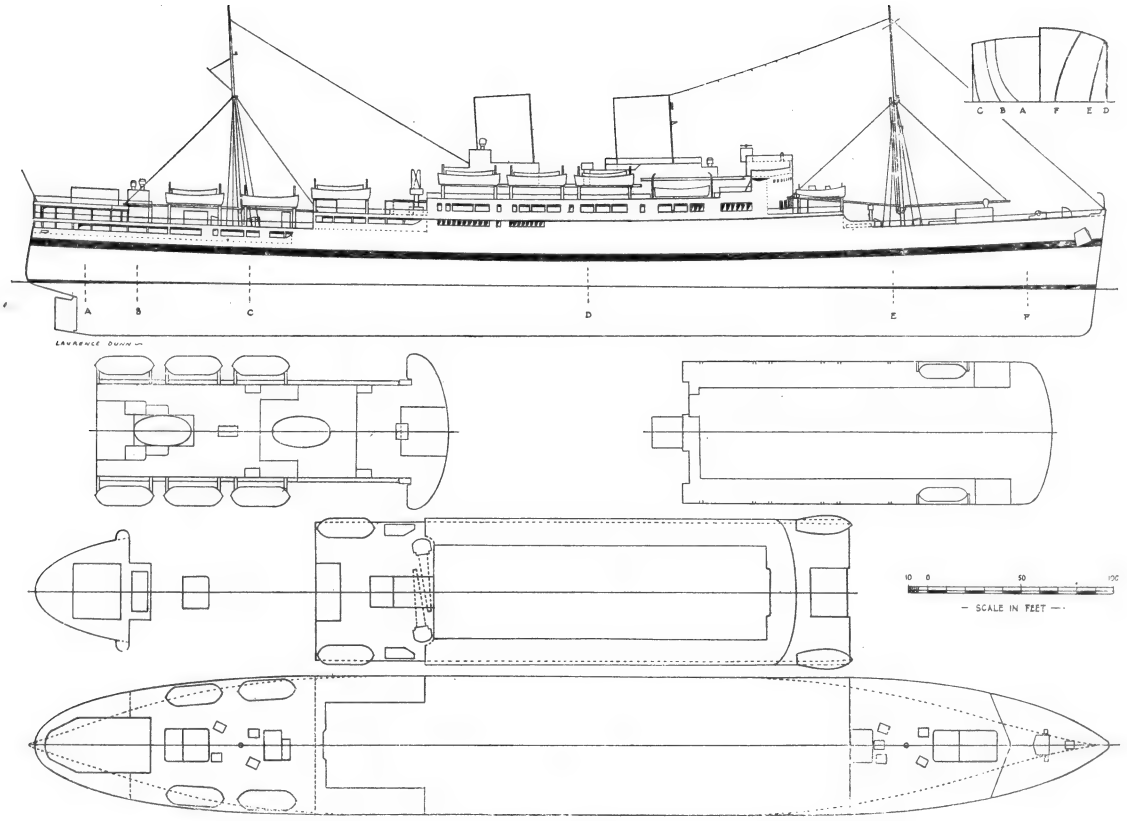
The *Empire Orwell* was one of the largest ex-German ships surrendered to Britain, and was originally the *Pretoria*, one of a pair of passenger and mail liners which Blohm and Voss built for the German Afrika Line. As the *Pretoria*, she was launched on July 18th, 1936, and was ready for service by December, after a mere five-month interval. What a contrast to the time to complete similar ships in this country during post-war years!

The *Pretoria*, and her sistership, the *Windhuk* (in those days both of 16,662 tons gross) were by far the largest and most ambitious ships ever built for their owners, being 577 ft. in overall length and 72.2 ft. in beam. They had twin screws driven by two sets of single reduction geared turbines of 14,200 s.h.p. Two Benson boilers of notably high pressure were fitted and these provided steam of 900 deg. F. at 1,200 lb. pressure. The speed of 18 knots was sufficient to make the run to Capetown in 17 days, and the ships promised to be serious rivals to those of the Union Castle Line. Accommodation was provided for approximately 150 first and 350 third class passengers and was of a particularly high standard. Accidents befall even new ships, as we saw last year with *Magdalena*, and after a great send-off from Hamburg, the *Pretoria* went aground on her maiden voyage off the entrance to Southampton Water and suffered the ignominy of spending Christmas on the mud.

In those days she had a greenish blue hull, white superstructure, buff masts and black topped buff funnels, bearing several bands of red, white and black.



The U.S. naval transport "Le Jeune"



Sheer and deck plans of " Empire Orwell "

Although not shown in the official photograph taken on trials, her appearance was rather marred soon after by the alterations made to her forward funnel, for a small inner uptake was raised so as to project several feet above the outer casing.

Peace-time colours, however, were only worn for a few months, but more lucky than her sister-ship, the outbreak of war found *Pretoria* in home waters. During the war the Germans used her first as a submarine depot vessel and then in 1945 she was listed as a hospital ship.

A report was published in April, 1945, that she had been sunk by a mine while carrying refugees to Copenhagen. This was disproved later that year when she was surrendered to Britain. She was then renamed *Empire Doon*, and put under the management of the Orient Line. Ships suitable for trooping were then at a premium, and she was given a hurried refit on the Tyne to make her fit for Allied service. Her next voyage was a nightmare for her engineers as her experimental type boilers gave perpetual trouble and finally at Port Said they " gave up the ghost " completely and the ship had to be towed back to Falmouth. Later she joined the ranks of unemployables off Southend, where she lay for many months. After careful examination it was decided that there was no option but to scrap the old boilers, install new ones, fit new auxiliaries and modify the main machinery. Shipyards here were then choked with reconstruction work and it was some time before a yard could be found which was able to do the work. As it was evident that the ship would be out of commission for a long period, it was decided at the same time to give her accommodation a very thorough refit so as to bring it as nearly as possible into line with new post-war trooping standards. Now she is able to accommodate 171 first and 84 second class passengers (these being respectively officers and warrant officers and their families), 96 sergeants and over 1,000 other ranks, providing new standards of comfort for all. Hammocks have been abolished and instead hinged " standee " berths are fitted in three tiers. Instead of having to live in the sleeping space, troops have been given separate daytime accommodation, while the original first class dining saloon has now become the main troops' mess hall. This, arranged on cafeteria lines, can serve over 300 at a time with a minimum of delay. The two original Benson boilers have been replaced by a pair of water tube ones of Foster Wheeler type, with a pressure of 500 lb. per sq. in. The turbines have been modified to suit the new pressure and normally develop about 11,000 s.h.p. On full power trials early in January, they were

opened up and at 12,600 s.h.p. the ship reached a maximum of 18¼ knots. Externally the main changes in her appearance lie in the extension of the bridge deck beyond the bridge towards the foremast and in the raising of all but two of the boats above deck. Now all but these two are on gravity davits. In order to obtain foundations for these, it has been necessary to alter the windows and openings along the promenade deck slightly. When under the German flag the masts were hinged half way up the topmasts to enable the ship to pass under the Kiel Canal bridges. Now they have been strengthened and made one. A number of small deckhouses have been added to house the ventilating equipment.

As the *Empire Doon*, she was less sightly for another reason, for then the blue band round her hull was painted 4 ft. lower down than now, giving her a rather top-heavy appearance.

At the time of her surrender, it was the practice of the Ministry of Transport to name all ex-enemy ships of her type after rivers, with the addition, of course, of the inevitable word "Empire."

Later, during her long stay at Southampton, the Ministry changed the "Doon" to "Orwell," out of compliment to her managers and so make her name more in keeping with the regular Orient Liners.

The *Windhuk* fared very differently. She was at Lobito, in Portuguese West Africa, when war was declared, and stayed there for some months, together with various other German ships. Then one night in November, 1939, she and the *Adolphe Woermann*—another of the same line—slipped unobtrusively out to sea. The *Windhuk's* crew was reported to be augmented by picked men from the various other German ships left behind and it seemed possible that she was about to start a new career as a raider.

This was just at the time when the *Graf Spee* had sunk a coastal tanker off the East African Coast, and possibly the *Windhuk's* departure was aimed to distract the attention of the Royal Navy from the pocket battleship.

The *Adolphe Woermann* was intercepted by a British cruiser soon after and scuttled herself to avoid capture, but the *Windhuk*, with a better turn of speed than her unfortunate consort, and having the advantage of bad weather, was able to reach the neutral port of Santos.

There she was safe for a short while, but in January, 1943, Brazil declared war on Germany, promptly seized the *Windhuk* and handed her over to the U.S. Naval Authorities. Then it was found that the German maintenance crew on board had been systematically smashing her machinery, and as thoroughly as they knew how.

Concrete had been poured into her turbines, the propeller shaft bearings had been cut with torches, boiler tubes had been melted by dry firing, and altogether only one generator just sufficient to provide for the needs of the saboteurs was found intact.

After the inspection party had returned to the States with their report, the Philadelphia Navy yard sent out a force of workmen, together with some diesel power units sufficiently large to drive one of the ship's propellers.

After a great deal of difficulty, this and various other items of equipment were installed. Finally she was ready for the voyage and relying on two ten-cylinder Fairbanks-Morse engines, totalling only 4,000 h.p., the *Windhuk*, carrying a part cargo of 4,000 tons of coffee, sailed for the States, arriving there in May, 1943, having made the voyage on one screw only. There the Navy re-engined and refitted her as the Naval transport *Le Jeune*. At the same time the after funnel was removed, new masts with high crosstrees were fitted and a very large radar tower built just abaft the bridge. In this role, despite her hideous appearance, she proved a very successful ship and is still in operation. With the recently American built transports of the "Admiral" and "General" classes, she ranks as one of the largest troopers under the Stars and Stripes.

Some Notes on Trafalgar Signals *(Continued from page 48)*

command are to bear White Colours, and a Union Jack is to be suspended from the fore top-gallant stay." It is sometimes stated that Union Flags were also suspended from the main topgallant stays in some ships, but no order is known for this. Although there is no definite evidence, it is most likely that the White Ensign was worn at the peak of the gaff rather than at the ensign staff, but one cannot be dogmatic on such points.

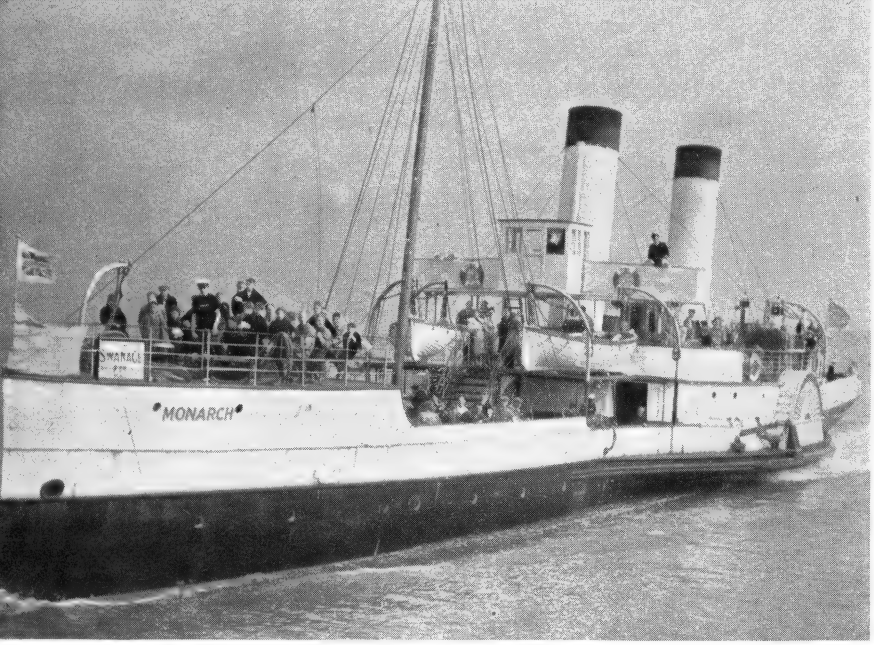
For those who wish to study the signals at Trafalgar in greater detail, the following publications will be useful:

Report of a Committee Appointed by the Admiralty to examine and consider the Evidence relating to the Tactics employed by Nelson at the Battle of Trafalgar. (H.M.S.O., 1913.)

Trafalgar Signals, by Commdr. H. P. Mead, R.N. (Percival Marshall & Co., 1936.)

Nelson's Signals: the Evolution of the Signal Flags, by W. G. Perrin. (H.M.S.O., 1908.)

All the above are out of print, but may be obtained through public libraries. The first gives extracts from the logs of many of the ships present, and all signal details, while the last, with some modifications, was largely incorporated in *British Flags*, by the same author (Cambridge University Press, 1922, but a new impression appeared in recent years). Commander Mead's very interesting and useful book is no longer available, stocks having been destroyed by enemy action, but may sometimes be found in secondhand book-shops.



The last of *P. S. Monarch*

by G. E. Webb

THE older type of paddle steamer, a common sight round our coasts not so long ago, is fast disappearing. The 62-year old P.S. *Monarch*, a beautiful example of a pleasure steamer of the Victorian era, was recently withdrawn from service and steamed out of Weymouth on her last voyage—to the breaker's yard.

She was built by Messrs. R. & H. Green, of London, in 1888, to dimensions 210 ft. by 22 ft., 315 tons gross. Her engine was rather out of the ordinary, for instead of a compound she was fitted with a two-cylinder simple by the London firm, Messrs. J. Penn & Son, giving her a speed of 14½ knots. The two cylinders had the normal diagonal disposition and were 41-in. bore by 48-in. stroke. Very little of her engine could be seen from the main deck alleyways alongside the engine room. Although most paddle steamers of her type have almost all their machinery displayed for all to see from this vantage point, *Monarch's* cylinders and motion were completely hidden. Only the crankshaft and the revolving big ends and eccentrics could be seen, and even they were not nearly as impressive a sight as they are in many steamers, by reason of the short stroke.

But that was her only disappointment, and she had plenty of other interesting features besides her engine. Her ventilators, for instance, were of a somewhat unusual pattern, for instead of the normal type of cowls, they were fitted with vertically louvred tops, which the wind kept constantly revolving. Then there were her beautifully proportioned paddle boxes with radial slots, a feature unusual to more modern paddle steamers; and, of course, her two slender, steeply raked buff funnels with black bands at the top. Instead of winches, she had a steam capstan on her fo'c'sle and another right aft on the main deck, which were used for hauling her in when berthing. These capstans were a very neat feature, only the revolving drum itself with a gleaming brass dome—shaped cap on top, standing above deck level, the cylinders and motion being out of sight underneath.

She belonged to Messrs. Cozens & Co. Ltd., of Weymouth. She was in the company's usual colours of black hull above the water line and green below, with white bulwarks and paddle boxes, separated from the black part of the hull by a narrow band of deep yellow. Her name, *Monarch*, on her bows and stern was blue with yellow shading, but on her paddle boxes, the name was in gold on a dark blue ground.

Although she was built as a pleasure steamer, the old ship's long life was by no means without adventure. It is interesting to note that on June 23rd, 1888, when she first started work between Bournemouth, the Isle of Wight and Weymouth, Bournemouth was only a village, and was beginning to look for recognition as a town. It was not until two years later, when *Monarch* was already established as a favourite, that the Bournemouth villagers achieved their ambition!

Then, after war had broken out in 1914, pleasure trips along the coast came to an end. But *Monarch* was not long idle. Like many another pleasure steamer, she was refitted for war service, and did much valuable work as a minesweeper.

After the war, she was again refitted and took up her old duties as a pleasure steamer. When, in 1939, the horrors of war broke out afresh, *Monarch* was once more called upon for service. This time she did duty as an examination ship, and although she was machine-gunned, and German bombs made several near-misses, she returned to Weymouth safe and sound after the end of hostilities, and settled down to a peaceful old age on the Bournemouth-Swanage service.

Good models of paddle steamers seem to be fairly rare, especially models of this type of vessel. Obviously, there is much more room available for machinery in a steamer which has a promenade

(*Continued on page* 56)

The Production of Small Propellers
by A. D. Trollope

THE production of small, accurate propellers for prototype ship models, though quite easy and straightforward, is a job that must be approached with a full realisation of its importance. If we examine the characteristics of a good propeller we shall see that the work involved calls for a good deal of care and accuracy.

The good propeller must be true in pitch and diameter to its specification and each blade must be identical in size, shape, curvature and pitch. The radial spacing of the blades about the boss must be equal and the line through each blade, from root to tip, must be at the same radial angle, relative to the shaft line, when seen in elevation. The propeller must be firmly secured to the shaft and in true axial alignment with it.

To satisfy all these requirements calls for careful and accurate work and to facilitate matters it is necessary to prepare one or two simple fixtures for the job.

Let us take, step by step, the making and mounting of a hypothetical propeller of the following dimensions, and from these instructions propellers of other sizes and blade arrangements can be made.

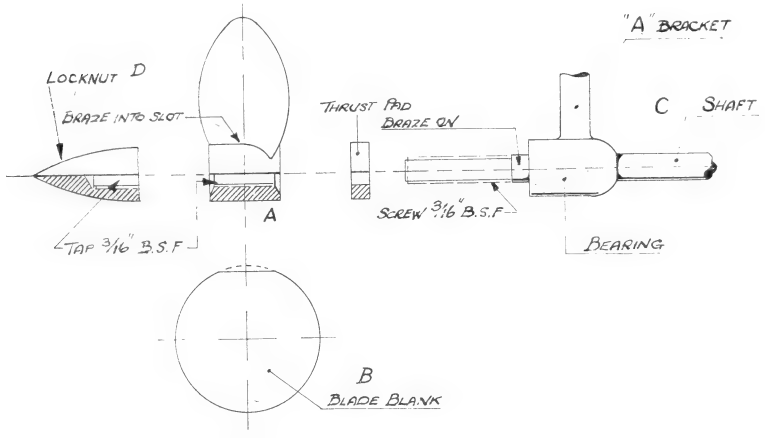


Fig. 1. Details of propeller and shaft

The dimensions we will work to are as follows:—Dia., 2 in.; pitch, 4 in.; number of blades, 3; material, hard brass; boss dia., $\frac{3}{8}$ in.; length, $\frac{1}{2}$ in; drilled and screwed $\frac{3}{16}$ in. B.S.F.; locknut, $\frac{3}{4}$ in. long drilled and screwed to suit.

The Boss. (See *A*, Fig. 1.) The boss can be parallel, as any streamlining of the boss entails a small shaft bearing forward of it and a small locknut aft, to fair up the line of the boss.

Chuck a short piece of $\frac{3}{8}$-in. brass rod in the three-jaw, leaving about $\frac{3}{4}$ in. projecting, and face the end. Centre with a small Slocombe drill and drill about $\frac{3}{4}$ in. with a $\frac{1}{8}$ in. drill. Use a good sharp, carefully ground drill and go slowly, as the hole needs to be dead true axially. Remove drill from drill chuck and insert it in the hole drilled. Now run lathe for a moment and any inaccuracy in the truth of the hole will be shown by the drill wobbling.

Open out to $\frac{3}{16}$ in. tapping size. Drill and tap $\frac{3}{16}$ in. B.S.F., using the tailstock drill chuck to hold the tap and going slowly. Don't forget you are tapping a blind hole.

Part off $\frac{1}{2}$ in. long, exact length does not matter really, rechuck boss blank and countersink deeply the forward end of the drilled bore. This countersink should be deep enough to leave only a narrow face about 3/32 in. wide on the boss face and is to make sure that the boss pulls up to the locking pad on the shaft truly and tightly. Countersink lightly the opposite end of the bore and carefully run the parallel tap right through.

Now chuck a short length of the shaft material, preferably $\frac{3}{16}$ in. ground mild-steel rod. If the three-jaw is not dead accurate make up a little split collet to hold the rod true. Screw the end for about $\frac{3}{4}$ in. with a $\frac{3}{16}$-in. B.S.F. thread, using the tailstock dieholder and going carefully. Start with the thread oversize and gradually reduce till it is a nice tight fit on the propeller boss thread.

To cut the blade slots in the boss we should make up a little fixture rather like a carpenter's mitre box. See Fig. 2. For all normal propellers a root angle of about 45 deg. seems to work as well as any. In any case that portion of the blade is not doing very much work and all we need is an angle of attack that will get the blade through the water easily.

The cutting fixture consists of a piece of flat bar, about $1\frac{1}{2}$ in. by $\frac{1}{4}$ in., bolted to the top slide of the lathe having four round pegs set vertically in pairs, to guide the saw blade This can be set at 45 deg or any desired angle, with the boss of the propeller between the two pairs of pegs. It will effectively guide the saw while the slots are cut.

Some simple form of radial indexing will be required to space the saw cuts accurately round the boss and the three jaws of the chuck can be utilised for this purpose. A piece of scrap rod, between the lathe shears and a horizontal chuck jaw will be found to be quite effective. The saw cuts should be deep enough to just break into the threaded bore and should be produced with a stiff slitting saw such as the Eclipse. Care must be taken to see that the blade cuts vertically.

This slotting operation can be done on the boss before parting off from the bar.

Blades. (See *B*, Fig. 1.) The blades should be made of good hard brass sheet or nickel silver, if obtainable, about 20- or 18-gauge in thickness. There is no point in using very thin blades as the tip speed of these small propellers is never more than about 5 or 6 m.p.h., so that a thick, well cambered blade is likely to give the best results. The best shape of blade is largely a matter of opinion and frankly at the low rotational speeds used in prototype vessels, it probably doesn't matter very much.

The circular blade is the easiest to produce and match and is as efficient as any and has the added advantage that small circular brass blanks can be purchased. The writer has on many occasions utilised copper coins for blades and very good ones they make. If elliptical or tapered blades are used, the blanks, after being cut and flattened, should be lightly soldered together and trimmed to shape with a smooth file to ensure that they are identical, one with another. They should be made a light push fit in the slots and when inserting them screw the dummy shaft end into the boss to ensure that they all go in the same distance. It is an advantage to file a small flat at the bottom of each blade so that they " sit " nicely in the slots. Clean and flux carefully with Boron and braze, using Easiflo or a low melting point silver solder. Do not braze with the dummy shaft screwed in. Some of the brazing material may get into the bore of the boss, so the parallel tap should be carefully put right through after brazing, to clear the threads.

Using the dummy shaft, screw the propeller on and chuck in the three jaw. Run the lathe at high speed and lightly touch the blade tips with a fine file. This will correct any slight inaccuracy of diameter that may have crept in. Go carefully and use a wide file or you may get a " dig in " that will ruin the propeller.

Make up a template giving the pitch angle required at the widest part of the blade, from plywood or stiff card, using the top of the top slide as a datum line. This datum is parallel with the shaft axis and therefore the angle of the template will be the same as the pitch angle required at that point.

Turn lathe until one blade is horizontal, grip blade in a large pair of parallel round nosed pliers, with the snouts of the pliers pointing from blade tip to root and twist in the required direction. At the same time loosen the grip slightly and allow the pliers to slide across the blade face. This sounds a bit involved, but the idea is to put a curve in the blade face; the action is exactly similar to turning an eye in a piece of wire, with round nose pliers. Go slowly and check carefully with the template. Repeat with each blade in turn. When all appear satisfactory run the lathe at its highest speed with the propeller on the dummy shaft and allow cigarette smoke to be drawn through the disc. It should suck the smoke in freely, particularly with the tips, and should eject it in a roughly parallel stream. Should the tips show any tendency to throw the smoke outwards, reduce the pitch angle of the extreme tip slightly and try again.

Many successful propellers run with practically no tip angle at all. When all is satisfactory clean up the blades with fine files and emery cloth to a high degree of finish. The sectional shape of the blades should be that of a good aerofoil, nicely rounded

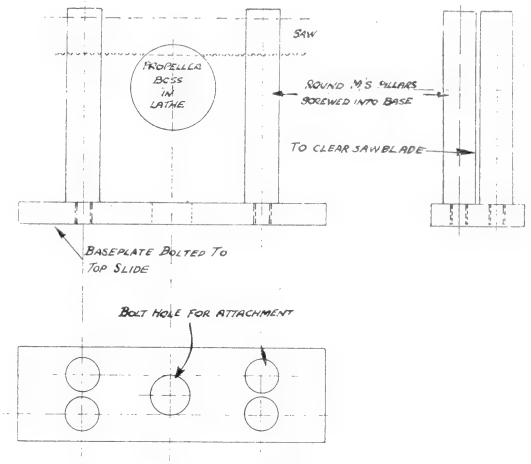

SAW
PROPELLER BOSS IN LATHE
ROUND M.S. PILLARS SCREWED INTO BASE
TO CLEAR SAW BLADE
BASEPLATE BOLTED TO TOP SLIDE
BOLT HOLE FOR ATTACHMENT

Fig. 2. Jig for cutting blade slots in boss

nose and fine trailing edge, with the blade camber concentrated on the leading face.

The Shaft. (See *C*, Fig. 1.) Preferably of ground mild-steel rod, which can be guaranteed to be circular and straight. Proceed as detailed for dummy shaft, chucking in three-jaw or split collet and threading for $\frac{3}{4}$ in. with $\frac{3}{16}$ in. B.S.F. die held in tailstock dieholder.

A small collar should be made in mild steel, diameter the same as the propeller boss and about $\frac{1}{8}$ in. thick, bored to a close fit on the shaft. This should be brazed to the shaft at the end of the threaded portion for the propeller to pull up to, after brazing clean up thread on shaft with die.

The Locknut. (See *D*, Fig. 1.) Proceed as detailed for boss but only drill and tap for about $\frac{3}{8}$ in. and countersink with Slocombe. Part off about $\frac{3}{4}$ in. long and drill 3/32 in. hole right through diametrically at a convenient spot, for the tommy bar to tighten locknut on shaft. Screw locknut on to dummy shaft, chuck to run truly and shape with a file to a streamline taper. Polish as boss and propeller.

Assembly. The bearing boss on the " A " or " I " bracket should be faired off on its leading face to a hemispherical shape to complete the general streamlining of the complete propeller unit. Enter shaft into bearing boss from astern, the bearing pad making a thrust bearing on the rear face of the bearing boss. Screw propeller on, making sure that it beds hard up on the pad. Screw on locknut and tighten with tommy bar. This assembly will never slacken off provided that the fits are good, no matter in which way the shaft is rotated.

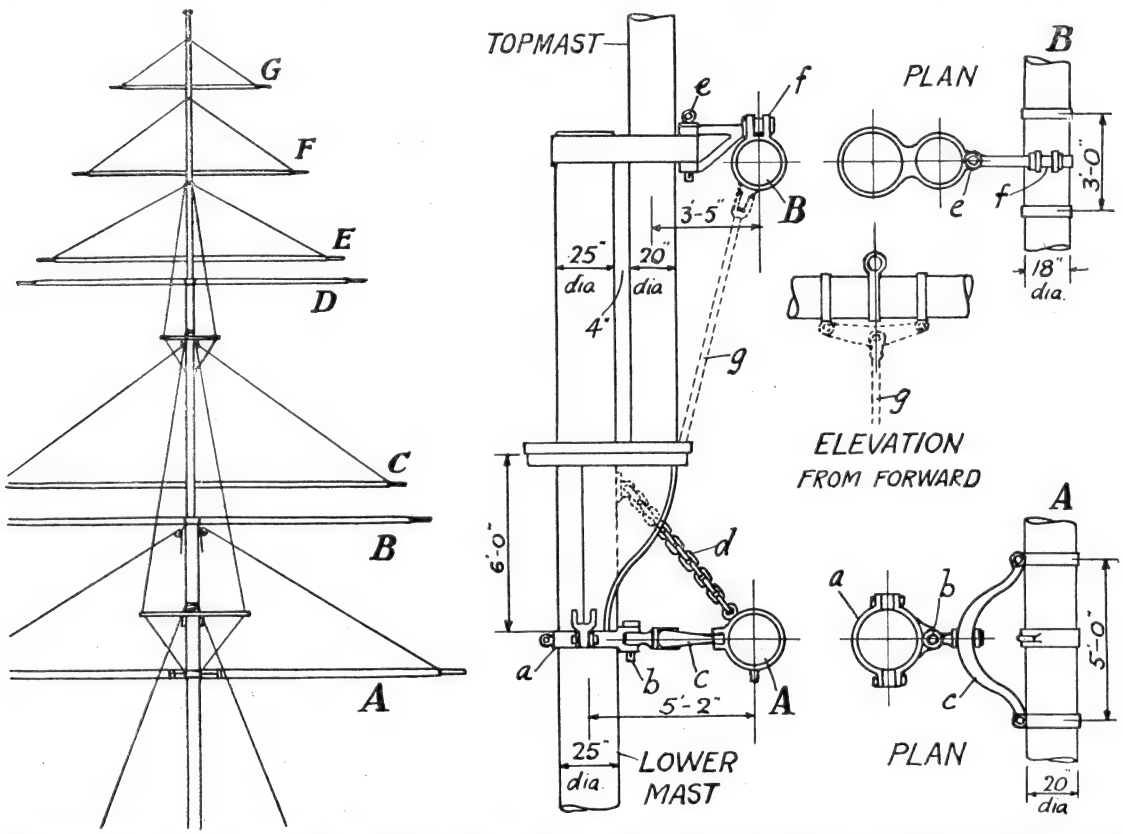
The Shipmodeller's Scrapbook

MAST AND YARD FITTINGS

MANY would-be ship modellers allow themselves to be deterred from starting to make a model of a ship by the seeming complexity of the gear. The rigging seems to be a confused tangle of shrouds, stays, halliards and such like, and they have no idea where to begin. It is obvious, however, that a ship's rigging must be so organised and arranged that, on the blackest night and under the worst conditions of storm and turmoil, the sailor is able to handle any of the many ropes required for the working of the ship. The resulting operation often takes place up aloft in the darkness and far from the place where he is handling the particular rope. And more than that, the sailor may be new to the ship and may be called upon to perform these operations before he has had time to get used to the ship. Therefore, the rigging of practically every ship must conform to a general plan which is common to all.

The ship modeller should make a careful study of the scheme on which a ship's rigging is based, and not only of the rigging but of the whole of the fittings of a ship. These have been developed by centuries of use, so that it is safe to conclude that much thought and experience has gone into the design of everything about a ship. Many years ago, at a class on machine drawing and design, the teacher told us that everything about an engine or a machine had a purpose, nothing was done for the sake of doing it, and that before we could understand or appreciate a design we must get to know the reason for everything about it. So also with ships.

The sketch shows a mast for a ship with double tops'ls, double t'gans'ls and a skysail, giving seven yards, which is the greatest number fitted to any mast. " A " is the lower yard, " B " and " C " the lower and upper tops'l yards, " D " and " E " the lower and upper t'gallant yards, " F " the royal yard and " G " the skysail yard. All the yards are rotatable in a horizontal plane to enable them to be set to suit the direction of the wind. Yards " A,"



DIMENSIONS ARE APPROXIMATELY CORRECT FOR A SHIP OF 1880 OF ABOUT 1900 TONS.

" B " and " D " are fixed as to height, whereas yards " C," " E," " F " and " G " are lowered down to stops when furling sail. Yards " F " and " G " are frequently sent down altogether when in port to reduce top weight. Incidentally, skysail yards were not often found in the later ships, and royal yards also were frequently dispensed with. The lower yard " A " is rotatable also in the vertical plane to enable it to be tilted or " cockbilled " to clear any building alongside which the ship may be moored. I have seen the upper and lower tops'l yards similarly cockbilled to clear an extra high building, but the fittings were not always designed with this in view.

Now to get down to details. The sketches illustrate the form of the fittings. The lower yard " A " was supported from the mast band " a " to which the lower futtock shrouds were anchored. A vertical pin " b " secured an eyebolt which carried the arch " c " which in turn carried the yard. The weight of the yard was taken by the chain " d " which at its upper end was secured to the mast.

The lower topsail yard " B " was carried by a truss, which was pivoted on a vertical pin " e," located in lugs formed on the mast cap. Its forward end was formed into a horizontal pin " f," which carried the yard. On earlier ships the yard was carried on a truss similar to that for the lower yard and its weight was taken by a strut " g " shown in dotted lines, which rested on the mast top. Iron ships of the period from about 1870 to 1890 had the truss shown, while the latest ships, in which the lower and topmasts were usually in one, reverted to the earlier truss, the weight of the yard being taken by a chain which was secured to an eye in the topmast.

The consideration of the remaining fittings will be included in our next instalment.

TRADE TOPICS

WE HAVE RECENTLY been trying out the *Multicraft Precision Cutter* which was sent us by the wholesale distributors, Messrs. Phillips Omnipool Ltd., of 29, Bolsover St., London, W.1. This consists of a light alloy handle having a collet at one end into which can be fixed any one of the four blades supplied with the tool. During use the other three blades are kept in the screwed cap at the opposite end, and when the tool is not in use all four blades can be stored in the cap. The collet holds the blade very firmly and as the blade is thicker than a razor blade it gives a firm clean cut. The tool has many uses for the ship modeller, whether in cutting out windows and doorways in miniature models, in carving the decoration for an historical model, in making blocks and small fittings, and in the innumerable finicky jobs where a fine firm knife is required, that one encounters in ship modelling. The four differently shaped blades give one the correct tool for each particular purpose. At its moderate price of 5s., it is sure to find its way into the kit of most ship modellers.

IN " TRADE TOPICS " in our March issue, we stated that the yachts for which Messrs. Lance and Mullett are marketing kits were designed by Mr. R. Lance. We should have said Mr. T. Lance, who is equally well known in model yachting circles. Mr. T. Lance designed the 36-in. Restricted Sharpie kit, but the larger models are made from designs by Mr. A. W. Littlejohn.

WE received recently a number of specimens of ship fittings from Models (City) Ltd., 11A, Union Court, E.C.2. These included a range of bollards of different sizes, glazed portholes, and rail stanchions of various types and sizes. They are in brass and the form and finish leave nothing to be desired. Their list includes a number of other items of interest to ship modellers, especially to those who build prototype model steamships.

MESSRS. MULTICORE SOLDERS LTD., of Mellier House, Albemarle Street, London, W.1, have submitted to us for trial and comments specimens of their various products. We were already familar with their Ersin Multicore Solder which has been well-known in electrical and radio circles for many years. A new product, however, is their Arax Multicore Solder which we have tried with very satisfactory results. It contains two cores of acid-free flux of exceptional fluxing ability and is intended for all soldering purposes where previously strip or stick solder was used with separate fluid or paste flux. With Arax Multicore Solder no extra flux is required and joints can be made rapidly on practically all metals except aluminium. It is particularly suitable for the little finicky soldering jobs that occur in ship modelling and especially in building the power plant for either a model steamer or a hydroplane. The flux residue is hygroscopic and may be easily removed with warm water. Multicore Solder Kits are available in a variety of sizes and specifications and may be obtained from most retailers. In case of difficulty supplies are sent direct by the manufacturers.

The last of *P.S. Monarch*

(Continued from page 52)

deck throughout its length. In the case of such ships as *Monarch*, where the main deck is open forward of the engine room housing, designing suitable machinery becomes quite a problem. However, it should be quite possible to install a simple two-cylinder horizontal oscillating engine, with the cylinders in the fore part of the ship. The crankshaft could come almost below the paddle shaft, which could be driven through gears with about 3 to 1 reduction. The boiler might well be a centre flue type, housed abaft the paddle shaft. Although a centre flue boiler has a smaller water range than some other types of steam generator, it has the big advantage of keeping the weight low down in the hull, an important point in designing a small paddle steamer.

circumference circle is 84 m.p.h." and line 16 " the weight—at 30 m.p.h., is reduced by 5 oz. $\times \frac{30^2}{53^2}$ which is 1.6 oz., equivalent to 3.4 oz. weight approximately."

It may be of interest to your readers to know that since writing the article, I have found that the higher speed of hull A.2 over C.2 was due to the " thrust augmentor " effect of the jet passing through the tail fins and plane. On my static test rig I found that this effect adds ½ oz. to the static thrust and possibly adds a little more when travelling at speed due to the air inrush. The whole question of thrust augmentors for jet propulsion should be a very interesting field of study for the model engineer with a liking for experimental work.

I wish to mention also that the speeds quoted in the article were taken from timing two 40-yd. laps with a 1/5 second stop watch, and since the times for the 80 yd. were in the region of 6 sec., the possible error is 1/30th, or 1 m.p h in 30 m.p.h. For this reason I have quoted speeds as whole numbers—the standard of accuracy does not justify decimals. When I see model speeds over 500 yd. taken to the second and third place of decimals I wonder if ultra-precision time keeping methods are really employed to justify it.

Yours faithfully,

Glasgow. D. C. JEFFREY.

A NEW CLASS FOR YACHTS

DEAR SIR:

The Helensburgh Model Yacht and Power Boat Club, founded last year, has the usual 6-metre and A-class models, and in addition a sail area class of 800 square inches actual measurement. This is a small edition of the American X or experimental class, but without any hull measurements or restrictions. A simple sharpie like Mr. Birt's *Natasha* might do very well. And if the designer has a notion for a double canoe (miscalled catamaran) he might try his hand at one. The class is experimental and all types, however freakish they may appear, are eligible.

Now then Messrs. Tansley, Lance, Daniels, Turner, Birt *et hoc genus omne* get busy at your drawing boards and give us a model that will leave the Marbleheads hull down astern and make rings round the A-Class.

Clynder, Yours faithfully,

Dunbartonshire. JOHN A. STEWART.

We are aware of the objections to increasing the number of classes in model yachting, but the class proposed in Mr. Stewart's letter, and apparently already in being at Helensburgh, might produce some very interesting experiments in hull design. We commend the suggestion to our model yachting readers.

News from the Clubs

SHIP MODEL SOCIETY NOTES. By " JASON "

Birmingham are not, after all, to hold an exhibition this year. Mr. Field tells me that after their special efforts for last year insufficient new material would be available for show purposes. They have sent a representative selection of their work to the Sheffield Exhibition during the Easter week. The Birmingham S.M.S. will be having an outing to Bristol which will probably include a visit to the famous shipbuilding yard of Messrs. Hill, a tour of the docks, a well-known ship or two in port and, what is keenly desired, contact with the Bristol S.M.S., which is now one of the oldest ship model societies in the country. It is to be hoped that Bristol will rally round and make this a " good time for all."

Ipswich S.M.S. This enthusiastic band are devoting part of their time to some research work on local shipbuilding history. Recently the members visited the barquentine *Cap Pilar*. She was thoroughly photographed and noted for the future guidance of shipmodellers. One of the most interesting models on the stocks is a sailing model of an East Indiaman. The maker of this model " loathes making models, but he is driven to it because he cannot buy them." Mr. H. W. Moffat will be glad to hear from those living locally who are interested. His address is 8, Parkside Avenue, Ipswich, Suffolk.

Bromley S.M.S. One of the members, Mr. G. E. Maddox, is working on a model of a Chinese junk of the type known as a Twago, which is a local coaster of Singapore. He is anxious to contact someone who knows the type; better still, you may have some snaps left over from active service in the Burma campaign. A description of this craft appeared in the *Mariner's Mirror* for July, 1946, but the detail work still has a few gaps. If you can help, drop Mr. Maddox a line at " Internos," 8, Westhurst Drive, West Chislehurst, Kent.

Wembley S.M.S. On May 8th, Mr. Draper will be talking to the members on " Miniature Modelling." Mr. Draper's favourite scale is 100 ft. to 1 in. He is an excellent craftsman with many worthwhile tips in his work.

THE THAMES SHIPLOVERS AND SHIP MODEL SOCIETY

On Wednesday, March 29th, on board R.R.S. *Discovery*, Mr. W. M. Liesching gave a very interesting lecture on the work of Trinity House. He explained in detail how the complicated task of guiding shipping around our coasts and estuaries is carried out by means of lighthouses, lightships, buoys and unlighted beacons. The meeting was well attended and the audience very appreciative. The shipmodellers' evening for May is on Thursday, the 11th, when Mr. G. H. Draper will speak on " Paints and Painting." For the shiplovers there will be a visit to the shipyard of Messrs. Pollock, of Faversham, builders of tugs and small steam vessels, on Saturday, May 27th.

RADIO CONTROLLED MODELS SOCIETY

The Radio Controlled Models Society is seriously perturbed at the number of radio controlled models taking part in field events at which no official frequency monitoring is arranged. At these events, over which the Society has no jurisdiction, models have been observed operating outside the frequency bands allotted by the Postmaster-

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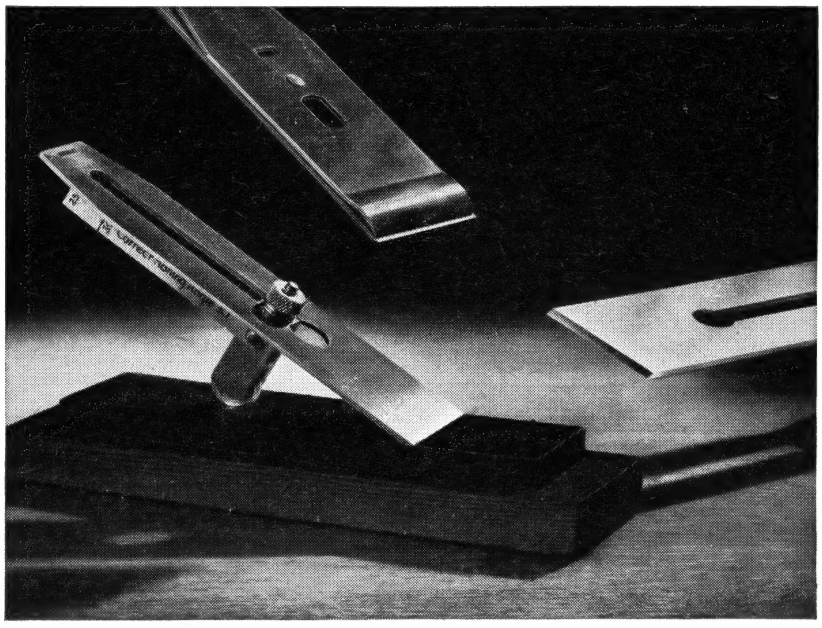

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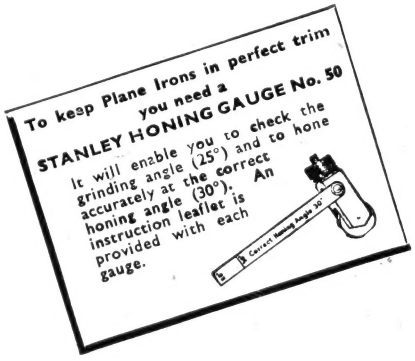
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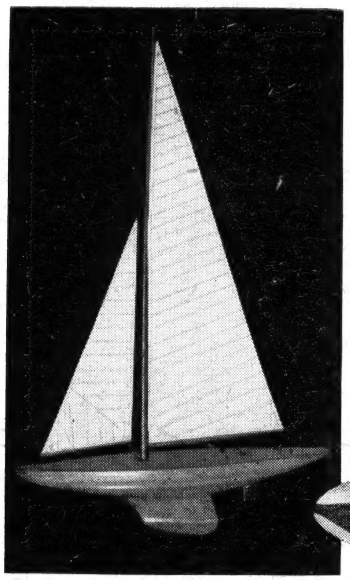

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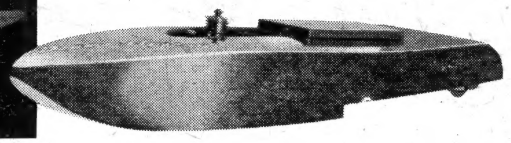

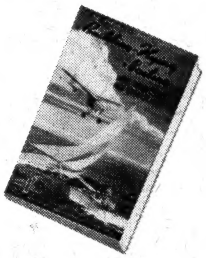

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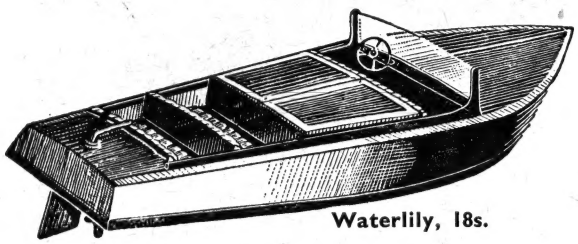

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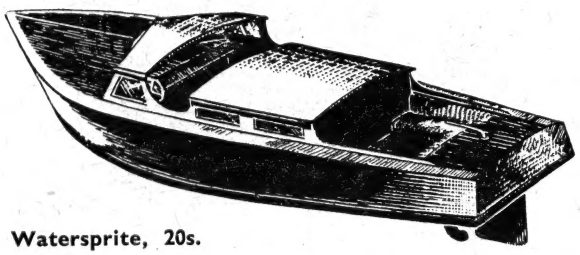

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General for that purpose. It is of vital importance that these concessions are not abused otherwise they may be withdrawn, and radio-control enthusiasts may find themselves forced to operate under the more stringent conditions imposed in other countries.

Monitoring equipment of a simple type is cheap to construct and operate and, in the view of the Radio Controlled Models Society, is essential in any radio controlled demonstration.

J. HEATHCOTE, Hon. Gen. Sec., Radio Controlled Models Society.

THE MODEL POWER BOAT ASSOCIATION

Fixtures for regattas for May and June are as follows:—May 7th, Malden; May 21st, Victoria or S.E. Association; May 29th (Whit Monday), Bournville; June 4th, South London (Open Regatta); June 11th, International; June 17th (Sat.) Coventry; June 18th, Altrincham; June 25th, Blackheath.

THE SOLENT SHIPLOVERS' SOCIETY

This society continues to progress well having this year drawn up a syllabus of lectures for the principle meetings. Membership now totals nearly thirty, both sexes, including members serving in the forces. Among the items planned for this year are visits to ships and places of nautical interest; members have already this year visited the liner *Andes* and the luxury trooper *Empire Orwell*. Recently the society had its first film show, the subject being the ships seen on a cruise to Southend. At the Industrial Exhibition to be held at Southsea in June, the society is having a stand displaying models, photographs, and various other items of a nautical nature, to which visitors will be welcomed. Meetings are held at the Carnegie Library, Fratton Road, Portsmouth, the society's headquarters, on the first and third Tuesdays in each month, at 7.30 p.m. During the summer season, i.e., May to September, meetings are held on the first Tuesday only.

THE BROMLEY AND DISTRICT SHIP MODEL SOCIETY

This club, formed in September last year, now has 25 members, representing every class of ship modelling, and holds a meeting on the first Monday in each month. An exhibition is to be held in October and the secretary will be glad to hear from " lone hands " who may wish to exhibit or loan models or articles of maritime interest. New members will be warmly welcomed and should write for details to the Hon. Secretary, L. N. WARE, 135, High Street, Bromley, Kent.

THE BIRMINGHAM MODEL YACHT CLUB

The first annual dinner of the B.M.Y.C. was held at the White Horse Hotel, Congreve Street, Birmingham, early this year, under the chairmanship of Mr. W. R. Dibbs. The guest of honour was Ald. Mrs. N. Hyde, Chairman of the Parks Committee. In all, members, their wives and friends and several members of the Bournville Model Yacht & Power Boat Club, made an assembly of 50 people.

During her speech, Ald. Hyde pledged herself to continue the valuable support she has given in the past, and in his reply, the chairman expressed the club's thanks for what has already been done to give the admirable facilities which the club enjoys.

The highlights of this season's programme are the open events, as follows:—

Sat., May 6th, Lawrence Bowl, 36R.; Sat., June 3rd, Gilbert Cup, 6M.; Sat., June 24th, Plant Cup, A class; Sat., July 15th, Macdonald Trophy, 10R.; Sat., Aug. 19th Builder Cup, M class.

GUILDFORD MODEL YACHT, POWER BOAT AND ENGINEERING SOCIETY

The Annual Power Boat Regatta will be held in Stoke Park on August 13th. Sailing for the " Nicklin " Cup will be on June 18th, to which all members of the Power Boat and Engineering Sections have been invited. The Secretary for the P.B. and M.E. Section is V. H. SELLEY, " Kenlea," Deerbarn Road, Guildford.

THE WICKSTEED MODEL YACHT AND POWER BOAT CLUB

The annual power boat regatta this year is to be held on Sunday, July 2nd. The sailing waters are situated in an excellent park where ample facilities are available for luncheons, teas and refreshments, and a welcome will be given to anyone wishing to enjoy a real day out. Yachting and general correspondence should be addressed to G. S. THORNE, 8, Meeting Lane, Burton Latimer, Northants; power boat correspondence to D. WARD, 5, Noble Avenue, Irthlingborough.

THE VICTORIA MODEL STEAMBOAT CLUB

On the occasion of the regatta held on Easter Monday, the B.B.C. arranged to broadcast a commentary of the events. Although the proceedings were considerably handicapped by rough weather and it was quite impossible to run speed-craft for this event, a combined steering competition and nomination race was run and the commentary by Mr. Rex Alston was reported as highly successful. The secretary of the club is J. B. Skingley, 238, Colney Hatch Lane, Muswell Hill, N.10.

SOUTHEND MODEL YACHT AND RAILWAY CLUB

The 1950 season was officially opened by S. J. McAdden, Esq., M.P., with a 6-metre event for the " Hinton Challenge Cup." The weather, unfortunately, was rather inclement, causing some casualties. The result was as follows:—

Naiad (S. L. Newman)	1st	24 points
Glenna (B. Oldland)	2nd	20 points
Yendis (S. Newman)	3rd	19 points

Notices

The Editor invites correspondence and original contributions on all subjects connected with model ships and power boats, which should be addressed to him at 23, Great Queen Street, London, W.C.2. Matter intended for publication should be clearly written, and should always bear the sender's name and address.

All correspondence relating to sales of the paper should be addressed to THE SALES MANAGER and correspondence relating to display advertisements to THE ADVERTISEMENT MANAGER.

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